

ATTORNEY DOCKET NO. 047763-5017-US

Application No.: 09/673,305

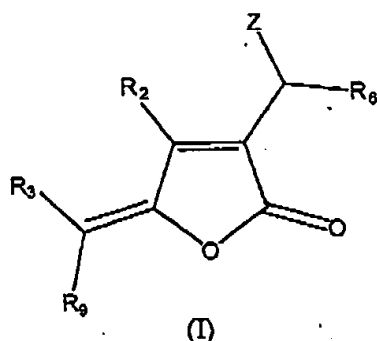
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Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A compound according to formula (I):



wherein R_6 is H, OH, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

R_2 and R_3 are independently or both H or halogen;

R_9 is halogen;

Z is independently selected from R_6 , halogen, $OC(O)R_6$, $=O$, amine, azide, thiol, mercaptoalkyl, alkenyloxy, mercaptoalkenyl, aryloxy, mercaptoaryl, arylalkyloxy, mercaptoarylalkyl, $SC(O)R_6$, $OS(O)R_6$, $OS(O)_2R_6$, $NHC(O)R_6 = NR_4$ or NHR_4 ;

R_4 is OH, alkyl, alkoxy, poly(ethylene glycol), alkenyl, aryl or arylalkyl; and

wherein each constituent substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic;

provided that:

when R_6 is propyl, R_2 is Br, R_3 is H or Br and R_9 is Br, then Z is other than H, $OC(O)CH_3$ or OH;

when R_6 is propyl, R_2 is Br, R_3 is H and R is I, then Z is other than $OC(O)CH_3$ or OH;

when R_6 is propyl, R_2 is Br, R_3 is H and R is Cl, then Z is other than OH;

when R_6 is propyl, R_2 is H, R_3 and R are Br, then Z is other than H; and

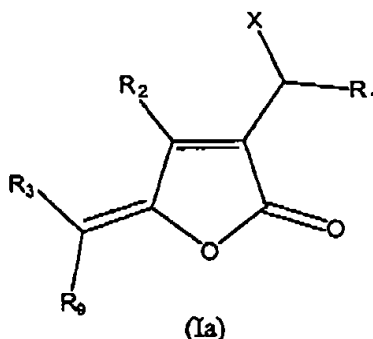
when R_6 is propyl, R_2 is Br, R_9 is Cl and Z is H, then R_3 is other than Cl.

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Claim 2 (currently amended): A compound according to formula (Ia):



wherein R_1 is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

X is a halogen, OH , OC(O)R_1 or $=\text{O}$;

R_2 and R_3 are independently or both hydrogen or halogen;

R_9 is halogen; and

wherein each constituent substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic; provided that:

when R_1 is propyl, R_2 is Br, R_3 is H or Br and R_9 is Br, then X is other than OC(O)CH_3 or OH ;

when R_1 is propyl, R_2 is Br, R_3 is H and R_9 is I, then X is other than OC(O)CH_3 or OH ;

and

when R_1 is propyl, R_2 is Br, R_3 is H, R_9 is Cl, then X is other than OH .

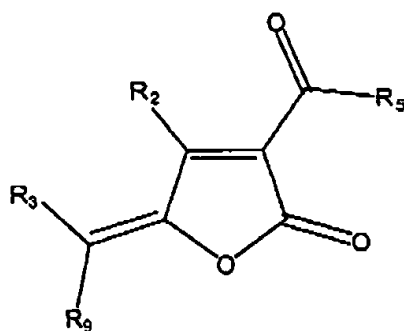
Claim 3 (canceled)

3/
Claim 4 (currently amended): A compound according to formula (III):

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(III)

wherein R₂ and R₃ are independently or both hydrogen or halogen;

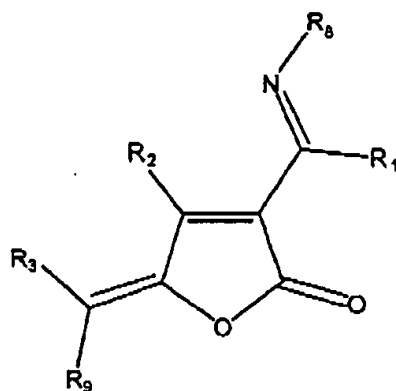
R₅ is OH or the same as R₁;

R₉ is halogen;

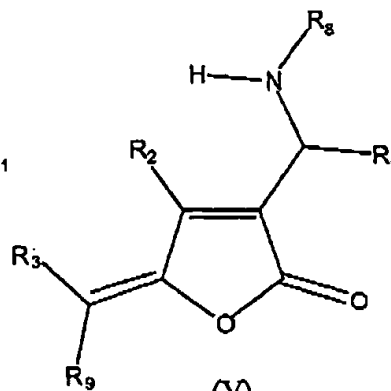
R₁ is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl; and

wherein each constituent substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic;

4/
Claim 5 (currently amended): A compound according to formula (IV) or (V):



(IV)



(V)

wherein R₁ is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

R₂ and R₃ are independently or both hydrogen or halogen;

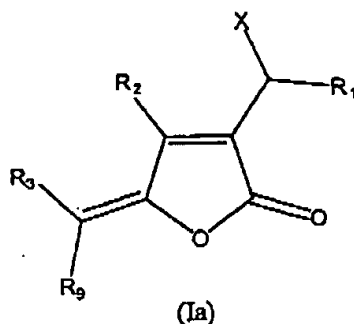
R₉ is halogen;

R₈ is OH, NHR₁, NHC(X)NH₂, NHC(X)NHR₁ or R₁ where X is O, S or NR₁; and

wherein each constituent substituent can be substituted or unsubstituted, straight chain or

branched chain, and either hydrophobic, or hydrophilic or fluorophilic.

5/
Claim 6 (previously presented): A method for forming a compound of formula (Ia), comprising reacting a fimbrolide with a halogenating agent and/or an oxygenating agent to form the compound of formula (Ia):



wherein R₁ is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

X is a halogen, OH, OC(O)R₁ or =O;

R₂ and R₃ are independently or both hydrogen or halogen; and

R₉ is halogen.

6/
Claim 7 (original): A method according to claim 6 wherein the halogenating agent is selected from the group N-bromosuccinimide, N-chlorosuccinimide, N-iodosuccinimide, bromine, cupric bromide, and phenyltrimethylammonium perbromide.

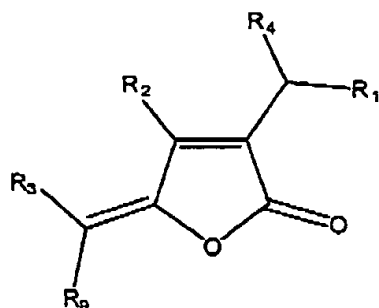
7/
Claim 8 (original): A method according to claim 6 wherein the oxygenating agent is selected from lead tetraacetate, Rose Bengal/oxygen gas, hydrogen peroxide/vanadium pentoxide, selenium dioxide, and 3-chloroperoxybenzoic acid.

8/
Claim 9 (currently amended) A method for forming a compound of formula II, comprising displacing and/or functionalizing a halogen or oxygen substituent in the side chain of a fimbrolide compound by treating the fimbrolide compound with a nucleophile or an electrophile to form the compound of formula (II):

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(II)

wherein R_1 is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

R_2 and R_3 are independently or both hydrogen or halogen;

R_9 is halogen; and

R_4 is selected from halogen, amine, azide, hydroxyl, thiol, alkyl, alkoxy, mercaptoalkyl, alkenyloxy, mercaptoalkenyl, aryloxy, mercaptoaryl, arylalkyloxy, mercaptoarylalkyl, $OC(O)R_1$, $SC(O)R_1$, $OS(O)R_1$, $OS(O)_2R_1$, $NHC(O)R_1$, $OC(O)NHR_1$, or $=O$;

wherein each constituent substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic;

provided that when R_4 is propyl, R_2 is Br, R_3 and R_9 are Cl, then R_1 is other than H.

9/ Claim 10 (original): A method according to claim 9 wherein the nucleophile is selected from metal halides, water, organic metal carboxylate, organic alcohols, dimethyl sulfoxide, and organonitrile/acid catalyst, and silver triflate.

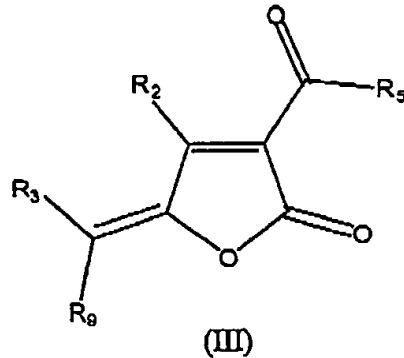
10/ Claim 11 (original): A method according to claim 9 wherein the electrophile is selected from organic acids, isocyanates, acid halides or active acylating agents such as carbonyl imidazoles or anhydrides (including activated hydrophilic PEG acids, PEG acid chlorides, PEG-oxycarbonylimidazoles and PEG-isocyanates) organic sulfonyl chlorides, and diethylaminosulfur trifluoride.

11/ Claim 12 (previously presented): A method for forming a compound of formula (III), comprising reacting an hydroxyl substituent in the side chain of a fimbrolide with an oxidising agent to form the compound in accordance with formula (III):

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wherein R_2 and R_3 are independently or both hydrogen or halogen;

R_5 is OH or the same as R_1 ;

R_9 is halogen;

R_1 is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl; and

wherein each ~~constituent~~ substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic.

^{12/} Claim 13 (original): A method according to claim 12 wherein the oxidising agents is selected from the group consisting of acid dichromate reagents in any form which may be free or polymer supported, chromium trioxide, manganese dioxide, potassium permanganate, selenium dioxide, ceric ammonium nitrate, ruthenium tetroxide, and hot nitric acid.

^{13/} Claim 14 (previously presented): A method according to claim ^{12/}13, wherein the acid dichromate agent is selected from the group consisting of a Jones reagent, pyridinium chlorochromate, and pyridinium dichromate.

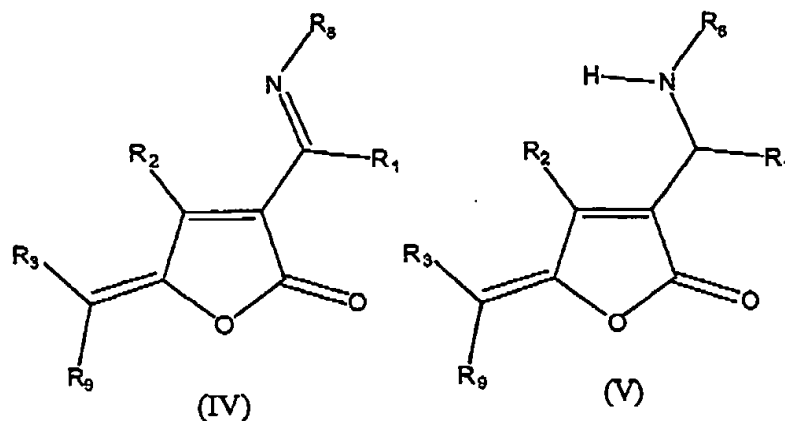
^{14/} Claim 15 (currently amended): A method for forming a compound of formula (IV) or (V), comprising reacting an aldehyde or ketone substituent in the side chain $-C(O)R_5$ of compound (III) with an amine to form a compound of formula (IV) or (V),

wherein formula (IV) and (V) are represented by:

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wherein R_1 is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

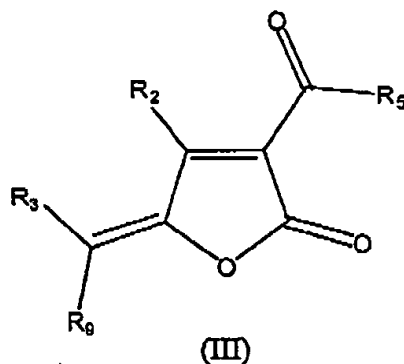
R_2 and R_3 are independently or both hydrogen or halogen;

R_9 is halogen;

R_8 is OH, NHR_1 , $NHC(X)NH_2$, $NHC(X)NHR_1$ or R_1 where X is O, S or NR_1 ; and

wherein each ~~constituent~~ substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic;

and wherein formula (III) is represented by:



wherein R_2 and R_3 are independently or both hydrogen or halogen;

R_5 is OH or the same as R_1 ; and

R_9 is halogen.

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¹⁵ Claim 16 (previously presented): A method according to claim 1¹⁴, wherein the amine is selected from hydroxyl amine hydrochloride, alkyl and aryl hydrazines, alkyl or aryl amine, optionally in the presence of a reducing agent.

¹⁶ Claim 17 (previously presented): A compound produced by the method of claim 6.⁵

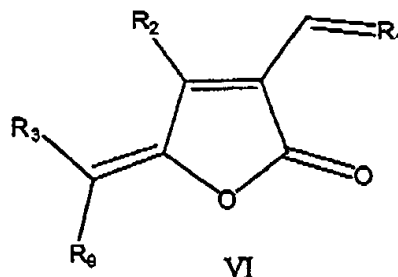
Claims 18-21 (canceled)

¹⁷ Claim 22 (previously presented): An antimicrobial, antiseptic and/or microbacterial static composition including at least one compound in accordance with claim 1.

¹⁸ Claim 23 (previously presented): An antifouling composition including at least one compound in accordance with claim 1.

Claim 24 (canceled)

¹⁹ Claim 25 (currently amended): A compound of formula (VI):



wherein R₁ is alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

R₂ and R₃ are independently or both hydrogen or halogen;

R₆ is halogen; and

wherein each ~~constituent~~ substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic;

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20/
Claim 26 (original): A compound according to claim 25 which is 4-Bromo-5-(bromomethylene)-3-(1-butenyl)-2(5H)-furanone.

19/
21/
8/9/
Claim 27 (previously presented): A compound produced by the method in accordance with claim

23/
11/12/
Claim 28 (previously presented): A compound produced by the method in accordance with claim

23/
Claim 29 (previously presented): A compound produced by the method in accordance with claim 15.

Claims 30-34 (canceled)

24/
Claim 35 (previously presented): An antimicrobial, antiseptic and/or microbial static composition including at least one compound in accordance with claim 17.

Claim 36 (canceled)

25/
Claim 37 (previously presented): An antimicrobial, antiseptic and/or microbial static composition including at least one compound in accordance with claim 27.

26/
Claim 38 (previously presented): An antimicrobial, antiseptic and/or microbial static composition including at least one compound in accordance with claim 28.

27/
Claim 39 (previously presented): An antimicrobial, antiseptic and/or microbial static composition including at least one compound in accordance with claim 29.

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28/
Claim 40 (previously presented): An antifouling composition including at least one compound in accordance with claim 17.

Claim 41 (canceled)

29/
Claim 42 (previously presented): An antifouling composition including at least one compound in accordance with claim 27.

30/
Claim 43 (previously presented): An antifouling composition including at least one compound in accordance with claim 28.

31/
Claim 44 (previously presented): An antifouling composition including at least one compound in accordance with claim 29.

32/
Claim 45 (previously presented): A surface coating composition incorporating at least one compound in accordance with claim 17.

Claim 46 (canceled).

33/
Claim 47 (previously presented): A surface coating composition incorporating at least one compound in accordance with claim 27.

34/
Claim 48 (previously presented): A surface coating composition incorporating at least one compound in accordance with claim 28.

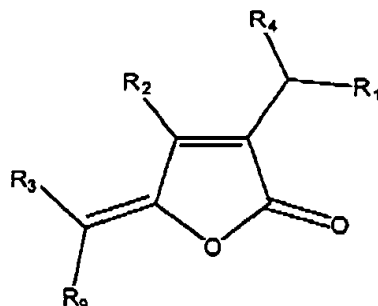
35/
Claim 49 (previously presented): A surface coating composition incorporating at least one compound in accordance with claim 29.

36/
Claim 50 (new): A compound according to formula (II):

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(II)

wherein R₁ is hydrogen, alkyl, alkoxy, oxoalkyl, alkenyl, aryl or arylalkyl;

R₂ and R₃ are independently or both hydrogen or halogen;

R₉ is halogen;

R₄ is selected from halogen, amine, azide, hydroxyl, thiol, or hydrophobic, hydrophilic or fluorophilic alkyl, alkoxy, mercaptoalkylalkenyloxy, mercaptoalkenyl, aryloxy, mercaptoaryl, arylalkyloxy, mercaptoarylalkyl, OC(O)R₁, SC(O)R₁, OS(O)R₁, OS(O)₂R₁, NHC(O)R₁, OC(O)NHR₁, or =O; and

wherein each substituent can be substituted or unsubstituted, straight chain or branched chain, and either hydrophobic, or hydrophilic or fluorophilic;

provided that:

when R₄ is propyl, R₂ is Br, R₃ is H or Br, and R is Br, then R₁ is other than H, OC(O)CH₃ or OH;

when R₄ is propyl, R₂ is Br, R₃ is H, R₉ is I, then R₁ is other than OC(O)CH₃ or OH;

when R₄ is propyl, R₂ is Br, R₃ is H, R₉ is Cl, then R₁ is other than OH;

when R₄ is propyl, R₂ is H, R₃ and R₉ are Br, then R₁ is other than H; and

when R₄ is propyl, R₂ is Br, R₃ and R₉ are Cl, then R₁ is other than H.